

Formulae

$$1. \text{ BEP (units)} = \frac{\text{Fixed cost}}{\text{Contribution per unit}}$$

$$\text{Contribution per unit} = Sp - Vc / \text{unit}$$

$$2. \text{ BEP (value)} = \frac{\text{Fixed cost}}{\text{Contribution per unit}} \times \text{Selling Price}$$

$$3. \text{ Output for target Profit} = \frac{\text{Fixed cost} + \text{Target Profit}}{\text{Contribution per unit}}$$

$$4. \text{ Output for target Profit} = \frac{\text{Fixed cost} + \text{Target Profit} \times Sp}{\text{Contribution per unit}}$$

$$5. \text{ Contribution to Sales Ratio (CS Ratio)}$$

$$= \frac{\text{Total contribution}}{\text{Sales}} \times 100$$

$$= \frac{\text{Contribution per unit}}{\text{Selling Price}} \times 100$$

$$\text{Margin of Safety} = \frac{\text{Budgeted units} - \text{BEP (unit)}}{\text{Budgeted units}} \times 100$$

$$\text{Profit} \\ \text{Contribution to Sales Ratio} :$$

Practical

a -

i) Break-even (unit) = $\frac{\text{Fixed cost}}{\text{Contribution per unit}}$

contribution = $sp - vc$

$$\therefore \text{BEP}(\text{unit}) = \frac{\text{Fixed cost}}{sp - vc}$$

$$\therefore \text{BEP}(\text{unit}) = \frac{2400}{12 - 8} = 600 \text{ units}$$

ii) BEP (value) = BEP (unit) \times selling price
 $\therefore 600 \text{ unit} \times \$12 = \$7200$

iii) CS ratio = $\frac{\text{Contribution per unit}}{\text{Selling price}} = \frac{600}{12} = 50\%$
 $= \frac{4}{12} \times 100 = 33.3\%$

iv) Selling Price \times output = ~~FC + VC~~

~~Output = $\frac{FC + VC}{\text{Selling price}}$ = $\frac{2400 + 8}{12}$~~

~~output = $\frac{\text{Profit}}{\text{Contribution per unit}} = \frac{200}{600} = 0.33$~~

~~Contribution per unit = $\frac{600}{12 - 8} = 150$~~

v) Target profit = ~~$\frac{FC + TP}{C}$~~ $\therefore \frac{2400 + 600 \times \frac{12}{600}}{600} = 60$

Date / /

Formula For multi Product

$$BEP(\text{units}) = \frac{\text{Total Fixed cost}}{W.A - \text{cont./unit}}$$

High-Low method

$$\text{variable cost per unit} = \frac{\text{cost High} - \text{cost Low}}{\text{High} - \text{Low}}$$

$$TC = FC + VC$$

Pr

$$BEP(\text{units}) = \frac{\text{Total Fixed cost}}{\text{Marginal contribution per unit}}$$

$$\text{Margin contribution per unit} = \text{Selling price} - \text{Variable cost}$$
$$= 1.50 - 1.20 = 0.3$$

$$BEP(\text{units}) = \frac{FC}{MC} = \frac{FC}{SP - VC} = \frac{18,000}{0.3} = 60,000 \text{ units}$$

$$BEP(\text{value}) = BEP(\text{units}) \times SP = 60,000 \times 1.50 = 90,000$$

$$\text{i. } BEP(\text{target profit by unit}) = \frac{FC + TP}{MC} = \frac{18,000 + 14,400}{0.3}$$
$$= 64,800 \text{ units}$$

$$\text{ii) margin of safety} = \frac{\text{budget} - BEP(\text{units})}{\text{budget}}$$

$$= \frac{\text{Budget} - \frac{FC}{MC} \times \text{budget}}{\text{Budget}} = \frac{100 - \frac{60,000}{0.3}}{100} = 100 - \frac{60,000}{100,000} = 100 - 0.6 = 40$$